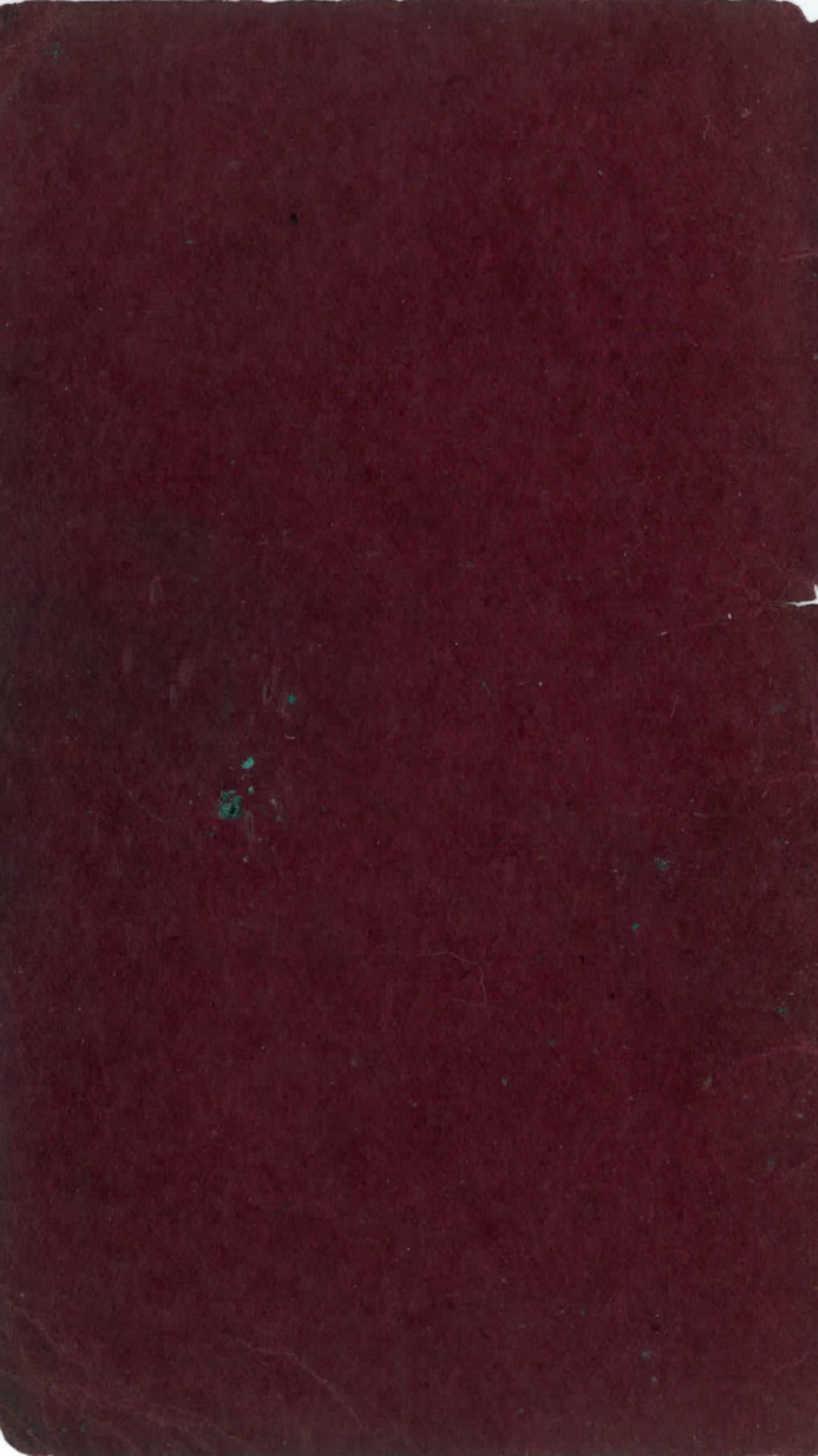


SHOP-POINTERS
FOR
SAILORS.



SHOP-POINTERS & "All Steel" TOOLS.

Copyright, 1898,

By J. Stevens Arms & Tool Co.

PUBLISHED BY

J. STEVENS ARMS & TOOL CO.

Chicopee Falls, Mass.

U. S. A.

Every tool listed in this book is of our own manufacture and warranted accurate.

In towns where the hardware trade does not sell our tools, we will send them, prepaid, upon receipt of list price.

*Prov. Albertype Co.
Prov., R. I.*



Shop Pointers and All-Steel Tools...

Published by
J. Stevens Arms & Tool Co.
Chicopee Falls, Mass.
U. S. A.

In submitting this work to the mechanics of the country, we fully realize the critical inspection to which it will be subjected. We invite inspection and criticism, for every tool herein illustrated has our own approval and guarantee—we believe them to be mechanically perfect, and this book is offered as the evidence of the faith that is within us.

We wish this little book to go forth as a helpmate to Mechanics; and with this end in view, we solicit criticism and correspondence. If every Mechanic into whose hands "Shop Pointers and All-Steel Tools" comes, will offer suggestions on tools, and give his ideas on using them, we will put this information into such form that we can give it to anyone who will write for it. A free interchange of ideas will help to make better mechanics; this means better wages.

To the Hardware trade and Dealers, we wish to say that in working for our own interests we are also working for yours. We sell you honestly-

made tools, which your customers will use with pleasure. The interests of the Mechanic, the Dealer, and the Manufacturer are common.

"All-Steel Tools" is our motto. Whenever advisable, we harden our All-Steel Tools; in fact, no expense or care will be spared to keep our tools where they now are—*at the front*. Man is fallible, and if through any oversight an imperfect tool should leave our factory, we will consider it a favor if the mechanic receiving it will return it to us, that we may make good the error.

During the last year, where there has been chance for improvement, every tool and rifle manufactured by us has been remodeled: some have been discontinued. Everything now made by us is modern in every particular.

We believe that our efforts in the course we are pursuing will be appreciated. We wish to work in closer sympathy with the mechanics, so they will feel there is one tool-making company that has their welfare in mind.

This book is the only one from which tools should be ordered. The manufacture of some tools, formerly made, has been discontinued.

THE J. STEVENS ARMS & TOOL CO.

DON'T — YES — NO.

Don't! Forget when writing us to sign your name plainly.

Don't! Forget to give us your full address.

Don't! Forget if not a dealer, or rated, that you must send money with order.

Don't! Forget to state how you want goods shipped.

Don't! Send money in a letter. Buy a draft on N. Y., P. O. money order, or express order.

Don't! Neglect in writing orders to give number, size, and list price.

Don't! Forget C. O. D. orders must have 20 per cent. sent with the order.

Don't! Forget it is more expensive to you to have goods sent C. O. D.

Don't! Forget we deliver tools free upon receipt of list price.

Don't! Forget we warrant every tool we make.

Don't! Forget we are liable to mistakes; so are you.

Don't! Forget, if a dealer, to accept of our cash discount; it means more profit.

Don't! Forget we furnish any dealer with electrotypes of anything we manufacture, if wanted to help push his business.

Don't! Forget we send tools by mail at buyer's risk; four pounds can be sent by mail; no more.

Don't! Forget our goods are second to none; we mean every word of this.

Don't! Stamp your tools with a steel stamp. See page 6.

Don't! Ask us to make special tools or sizes. We can't; we are too busy.

Don't! Forget we send catalogs out free.

Yes! Every tool in this book is warranted and guaranteed satisfactory.

Yes! We send catalogs free to any part of the world.

Yes! We send goods by mail, at the purchaser's risk.

Yes! We would be glad to hear from you with any suggestions.

Yes! We make rifles, pistols, and shot guns. Our reputation is second to none.

No! We will not deliver tools except on receipt of list price.

No! We don't make all the best tools on the market, but we are going to.

ETCHING FLUID

For marking all kinds of fine tools ; will mark on either steel or iron.

Mechanics make a great mistake in stamping their names, with a steel stamp, on their fine tools. You may do it ever so carefully, but you are sure to spring or throw out of true the tool so stamped. Fully 95% of the tools returned to us with the information that they are not true, have been stamped with a steel stamp. To overcome this, we have decided to place in the reach of all mechanics a fluid that will mark their tools better, look nicer, and yet not injure the accuracy in the least.

Remember this Etching Fluid is DEADLY POISON.

Full directions with each bottle. Price 25 cents per bottle.

PLEASE READ THIS.

Chas. P. Fay, so well known as an inventor and designer of calipers, dividers, and fine tools, has acquired the interest of his late father in the J. Stevens Arms & Tool Co., where he learned his trade and brought out his first calipers and dividers. Our tool department is under his supervision.

The Fay Ideal and Leader Calipers and Dividers are his latest patents in this line, while there are also ready, or in process of construction, several new tools which will fill long felt wants of mechanics.

Our new tools are far superior to anything yet produced, and the remodeling of our old line makes our complete line second to none.

J. STEVENS ARMS & TOOL CO.

New Lock Joint Calipers.

DESCRIPTION.

We wish to direct the attention of the mechanics who prefer the Lock Joint style of Caliper, instead of the spring bowed, to the illustration of our new Spring Tempered Lock Joint Calipers on pages 9, 10 and 11.

They are made from the best crucible sheet steel, hardened and tempered so nicely that the legs may be sprung sideways to an angle of 30 degrees when they will snap back into line again as before.

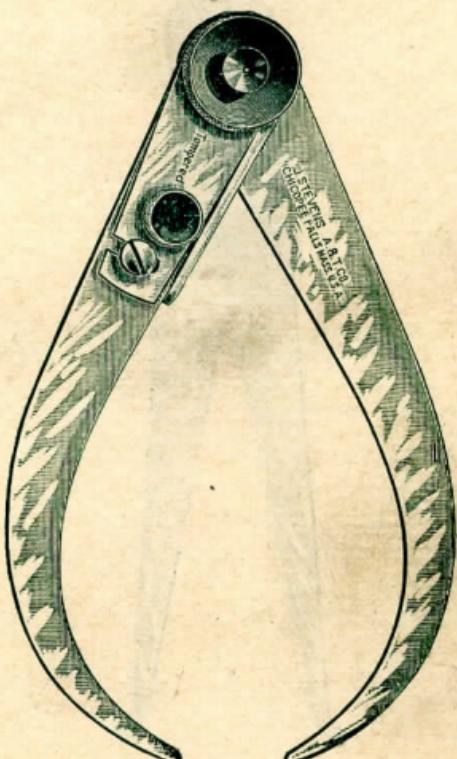
All sizes made on correct lines with finished oval edges.

The legs are made wider at the joint than commonly, more like the old-fashioned hand-made caliper; and they taper to a slender caliper point, giving them a neat appearance. The locking device for the joint is so powerful that the locking disc is made no larger than the joint on any of the sizes.

Realizing that one of the chief faults of calipers of this class has been their unnecessary weight, we have reduced ours to almost one-half of any other make.

Lock Joint Caliper.

No. 55 A.



ALL SIZES TEMPERED.

The sizes below not only represent their length but their caliper capacity.

PRICES.

3 inch	-	\$.90	8 inch	-	\$1.25	16 inch	-	\$2.25
4 "	-	.90	10 "	-	1.50	18 "	-	2.50
5 "	-	1.00	12 "	-	1.75	20 "	-	2.75
6 "	-	1.00	14 "	-	2.00	24 "	-	3.50

Rubber Packing.

Where rubber packing is used, it will last many times longer and not blow out, if a piece of common wire screen (same as used in window screens) is put on each side of the rubber. It embeds itself in the rubber and holds it together, so that when hot and soft, it cannot blow out.

Lock Joint Caliper.

No. 55 B.



ALL SIZES TEMPERED.

For description see page 8.

PRICES.

3 inch	-	\$.90	8 inch	-	\$1.25	16 inch	-	\$2.25
4 "	-	.90	10 "	-	1.50	18 "	-	2.50
5 "	-	1.00	12 "	-	1.75	20 "	-	2.75
6 "	-	1.00	14 "	-	2.00	24 "	-	3.50

Substitute for Borax.

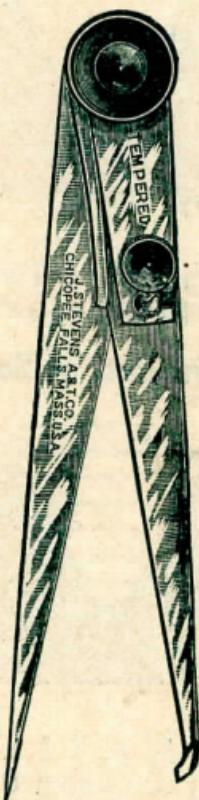
Copperas,	-	-	-	2 OZ.
Saltpetre,	-	-	-	1 "
Common Salt,	-	-	-	6 "
Black Oxide of Manganese,	-	-	-	1 "
Prussiate of Potash,	-	-	-	1 "

All pulverized and mixed with 3 lbs. good welding sand.

High carbon steel can be welded with this at a lower heat than is required with borax.

Lock Joint Hermaphrodite Caliper.

No. 55 C.



ALL SIZES TEMPERED.

For description see page 8.

PRICES.

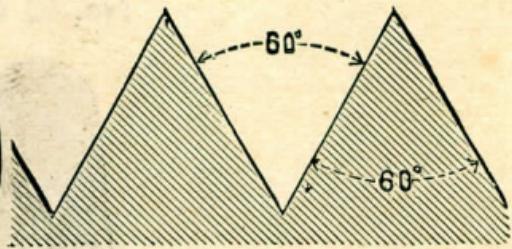
3 inch	-	\$.90	8 inch	-	\$1.25
4 "	-	.90	10 "	-	1.50
5 "	-	1.00	12 "	-	1.75
6 "	-	1.00			

Case Harden Cast Iron.

Heat to a red heat, roll in a composition consisting of equal parts of Prussiate of Potash, Sal Ammoniac, and Saltpetre, pulverized and thoroughly mixed. Plunge while yet hot into a bath containing 2 oz. of Prussiate of Potash and 4 ozs. of Sal Ammoniac to each gallon of cold water.

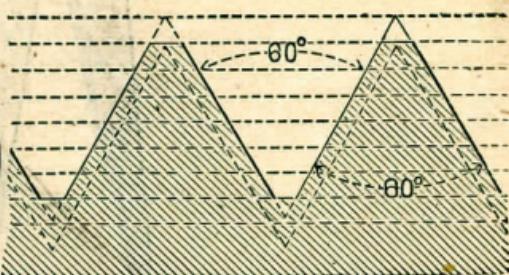
Forms of Threads.

V Thread.



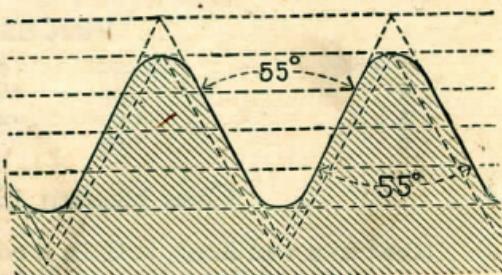
Sizes.	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
No. Thr'ds.	20	18	16	14	12	11	10	9	8	7	7	6	6	5	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$

U. S. Franklin Inst. or Sellers' Thread.



Sizes.	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
No. T'ds.	20	18	16	14	13	12	11	10	9	8	7	7	6	6	5	5	4 $\frac{1}{2}$	

Whitworth (English) Standard Thread.



Sizes.	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
No. Thr'ds.	20	18	16	14	12	11	10	9	8	7	7	6	6	5	5	4 $\frac{1}{2}$	4 $\frac{1}{2}$

Lock Joint Dividers.

No. 55 F.



This cut represents dividers made same as Nos. 55 A, B, and C. They are good, stiff dividers, the steel being of good quality and well hardened in oil.

PRICES.

6 inch dividers,	-	-	\$1.00
8 " "	-	-	1.25
10 " "	-	-	1.50

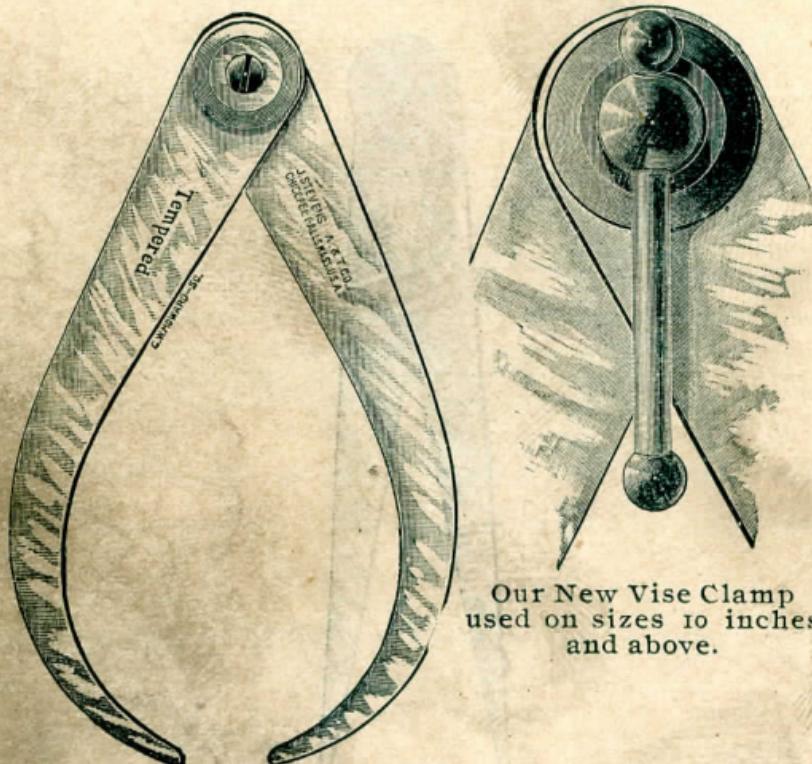
Pointer.

To increase a reamer to size when worn, burnish the face of each tooth with a hardened burnisher, (made easily) from a three-cornered file nicely polished on the corners. This will increase the size from 2 to 10 thousandths in diameter. Then hone back to the required size.

Firm Joint Outside Caliper.

(FAY'S PATENT)

No. 56 A.



All Sizes Tempered.

These Calipers are made of the best crucible sheet steel and are nicely tempered, in all sizes. The joint can be adjusted to any desired friction without roughing up. They resemble more in lightness and shape the hand-made tool-makers' calipers than any others on the market. Sizes 10 inches and over have our new vise clamp. (See cut.)

PRICES.

3 inch	-	\$.40	8 inch	-	\$.80	16 inch	-	\$1.75
4 "	-	.50	10 "	-	.90	18 "	-	2.10
5 "	-	.55	12 "	-	1.00	20 "	-	2.50
6 "	-	.65	14 "	-	1.50	24 "	-	3.00

Pointer.

To make a tap or reamer cut larger than itself, put a piece of waste in one flute, enough to crowd it over and cut out on one side only. In large sizes ($\frac{1}{2}$ -inch or over) put a strip of tin on one side and let it follow the tap through. You will be surprised at the result.

31/125
08125-64-19

Table of Decimal Equivalents

OF

8ths, 16ths, 32ds, and 64ths of an Inch.

8ths.	9/16 = .5625	19/32 = .59375	19/64 = .296875
1/8 = .125	11/32 = .34375	21/64 = .328125	
1/4 = .250	13/32 = .40625	23/64 = .359375	
3/8 = .375	15/32 = .46875	25/64 = .390625	
1/2 = .500	17/32 = .53125	27/64 = .421875	
5/8 = .625	19/32 = .59375	29/64 = .453125	
3/4 = .750	21/32 = .65625	31/64 = .484375	
7/8 = .875	23/32 = .71875	33/64 = .515625	
16ths.	25/32 = .78125	35/64 = .546875	
1/16 = .0625	27/32 = .84375	37/64 = .578125	
3/16 = .1875	29/32 = .90625	39/64 = .609375	
5/16 = .3125	31/32 = .96875	41/64 = .640625	
7/16 = .4375	64ths.	43/64 = .671875	
9/16 = .5625	1/4 = .015625	45/64 = .703125	
11/16 = .6875	3/4 = .046875	47/64 = .734375	
13/16 = .8125	5/4 = .078125	49/64 = .765625	
15/16 = .9375	7/4 = .109375	51/64 = .796875	
32ds.	9/4 = .140625	53/64 = .828125	
1/32 = .03125	11/4 = .171875	55/64 = .859375	
3/32 = .09375	13/4 = .203125	57/64 = .890625	
5/32 = .15625	15/4 = .234375	59/64 = .921875	
7/32 = .21875	17/4 = .265625	61/64 = .953125	
		63/64 = .984375	

Firm Joint Inside Caliper.

(FAY'S PATENT.)

No. 56 C.



Our New Vise Clamp
used on sizes 10 inches
and above.

All Sizes Tempered.

The above Inside Caliper is made with the same joint and from the same stock as No. 56 A, and is also nicely tempered in all sizes. Sizes 10 inches and over have our new vise clamp. (See page 14.)

PRICES.

3 inch - -	\$.40	8 inch - -	\$.80	16 inch - -	\$ 1.75
4 " - -	.50	10 " - -	.90	18 " - -	2.10
5 " - -	.55	12 " - -	1.00	20 " - -	2.50
6 " - -	.65	14 " - -	1.50	24 " - -	3.00

Tempering Liquid.

To 6 quarts of soft water put in one oz. of corrosive sublimate, and common salt, two handfuls. When dissolved, it is ready for use. The first gives toughness to the steel, while the latter gives hardness. (Remember this is deadly poison.)

28

Table of Decimal Equivalents

OF

Millimeters and Fractions of Millimeters.

$\frac{1}{100}$ mm. = .0003937 inch.

mm. inches.	mm. inches.	mm. inches.
$\frac{1}{50} = .00079$	$\frac{2}{50} = .02047$	$2 = .07874$
$\frac{2}{50} = .00157$	$\frac{2}{50} = .02126$	$3 = .11811$
$\frac{3}{50} = .00236$	$\frac{2}{50} = .02205$	$4 = .15748$
$\frac{4}{50} = .00315$	$\frac{2}{50} = .02283$	$5 = .19685$
$\frac{5}{50} = .00394$	$\frac{3}{50} = .02362$	$6 = .23622$
$\frac{6}{50} = .00472$	$\frac{3}{50} = .02441$	$7 = .27559$
$\frac{7}{50} = .00551$	$\frac{3}{50} = .02520$	$8 = .31496$
$\frac{8}{50} = .00630$	$\frac{3}{50} = .02598$	$9 = .35433$
$\frac{9}{50} = .00709$	$\frac{3}{50} = .02677$	$10 = .39370$
$\frac{10}{50} = .00787$	$\frac{3}{50} = .02756$	$11 = .43307$
$\frac{11}{50} = .00866$	$\frac{3}{50} = .02835$	$12 = .47244$
$\frac{12}{50} = .00945$	$\frac{3}{50} = .02913$	$13 = .51181$
$\frac{13}{50} = .01024$	$\frac{3}{50} = .02992$	$14 = .55118$
$\frac{14}{50} = .01102$	$\frac{3}{50} = .03071$	$15 = .59055$
$\frac{15}{50} = .01181$	$\frac{4}{50} = .03150$	$16 = .62992$
$\frac{16}{50} = .01260$	$\frac{4}{50} = .03228$	$17 = .66929$
$\frac{17}{50} = .01339$	$\frac{4}{50} = .03307$	$18 = .70866$
$\frac{18}{50} = .01417$	$\frac{4}{50} = .03386$	$19 = .74803$
$\frac{19}{50} = .01496$	$\frac{4}{50} = .03465$	$20 = .78740$
$\frac{20}{50} = .01575$	$\frac{4}{50} = .03543$	$21 = .82677$
$\frac{21}{50} = .01654$	$\frac{4}{50} = .03622$	$22 = .86614$
$\frac{22}{50} = .01732$	$\frac{4}{50} = .03701$	$23 = .90551$
$\frac{23}{50} = .01811$	$\frac{4}{50} = .03780$	$24 = .94488$
$\frac{24}{50} = .01890$	$\frac{4}{50} = .03858$	$25 = .98425$
$\frac{25}{50} = .01969$	$1 = .03937$	$26 = 1.02362$

10 mm. = 1 Centimeter = 0.3937 inches.

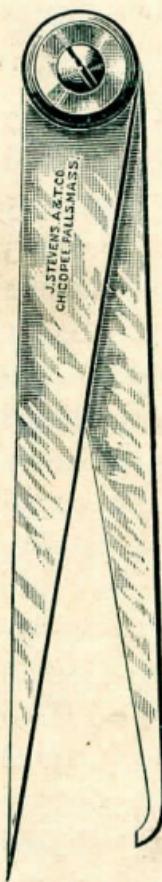
10 cm. = 1 Decimeter = 3.937 "

10 dm. = 1 Meter = 39.37 "

25.4 mm. = 1 English Inch.

Firm Joint Hermaphrodite Caliper.

No. 56 E.



ALL SIZES TEMPERED.

No. 56 E is same in stock, joint, and temper as No. 56 A.

PRICES.

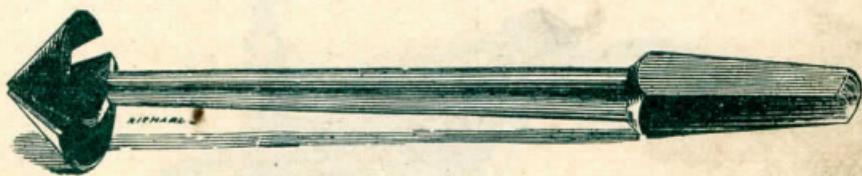
3 inch	-	\$.40	8 inch	-	\$.80
4 "	-	.50	10 "	-	.90
5 "	-	.55	12 "	-	1.00
6 "	-	.65			

To Soften Steel.

Cover with clay, heat to a cherry red in a charcoal fire, and let cool over night in the fire.

Patent Double-Lip Countersink.

No. 57.



This is the only Double-lip Self-centering Wood Countersink that has a keen-cutting edge, and the only one made on the true principle for a wood-working tool. It will clear itself of its shavings in any kind of wood and will cut a smooth, round hole. It is made from the best of steel, forged, twisted, and tempered. It can be sharpened from the inside with a file. We have manufactured this tool for twenty years, and the demand is constantly increasing.

PRICE BY MAIL.

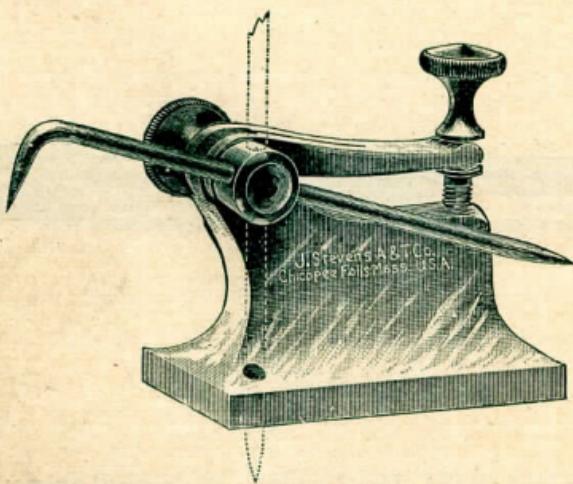
$\frac{5}{8}$ inch,	-	-	35 cents.
$\frac{7}{8}$ "	-	-	40 cents.

To Soften Steel.

Heat steel to a low cherry-red, and when cooled so it is black in a dark place, cool in the juice or water of common beans.

Bench Surface Gauge.

No. 58.



Price \$2.00

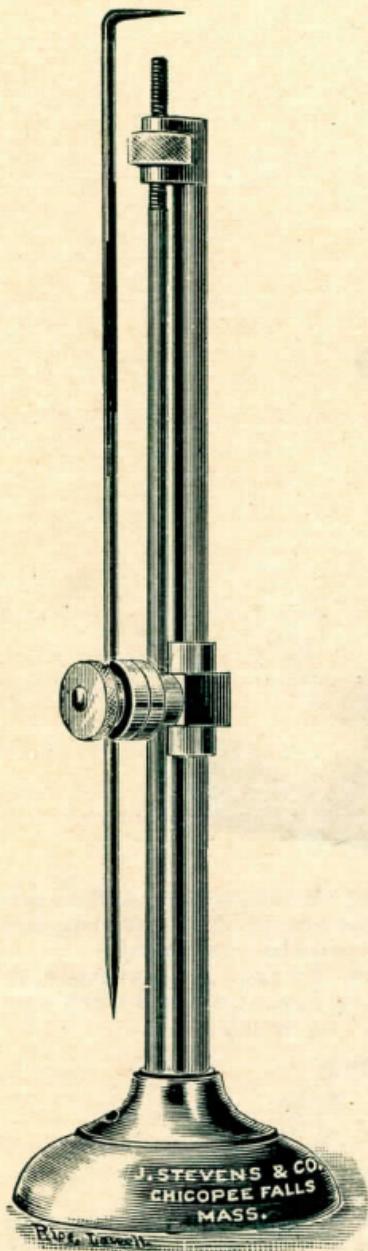
This tool is a modification of the bench gauge that has been made by us for over twenty years. It is made of steel throughout, and its base is hardened and ground true. After tightening the scribe firmly, a fine adjustment is obtained by the thumb-screw at the opposite end of the lever. There is a hole through the base so it can be used as a depth gauge. This tool is very useful in laying out work on the bench, block or in transferring lines on shaper or planer.

Tempering Liquid.

Water, 3 gals., Salt, 2 qts., Sal Ammoniae and salt-petre, of each 2 oz., ashes from white ash bark, 1 shovel full. The ashes cause the steel to scale white and smooth as silver. Do not hammer too cold. To avoid flaws, do not heat too high which opens the pores of the steel. If heated carefully you will get hardness, toughness, and the finest quality.

Ideal Surface Gauge.

No. 59.



This Gauge is made strong and durable, especially for planer work. The binder grips the pointer firmly, and by driving the spindle into the base and adjusting the pointer from an independent rod we secure a much more rigid tool than those that are adjusted with a nut at the bottom of the spindle.

PRICES.

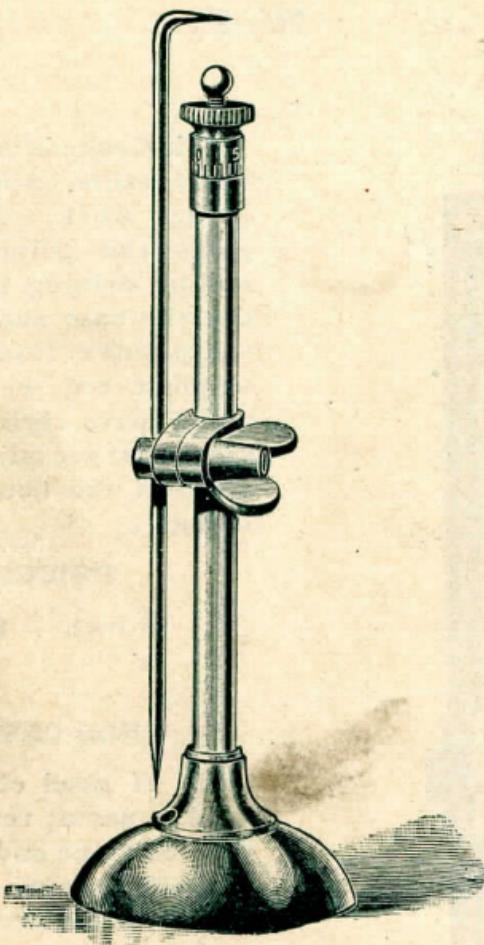
8 inch	\$2.00
12 "	2.75

TO WELD CAST IRON.

Take of good clean white sand, 3 parts; refined solution fosterine and rock salt of each 1 part; heat the pieces to be welded in a moderate charcoal fire, occasionally taking out and dipping into the composition, until they are of a proper heat to weld. Then lay at once on the anvil and gently hammer together. If done carefully by one who understands welding iron, they will be nicely welded.

Micrometer Surface Gauge.

No. 59½.



This Gauge is made of steel throughout. A fine adjustment of $\frac{1}{1000}$ of an inch can be secured by turning the thumb screw at the top of the spindle one point.

Its base is case-hardened and the tool is so simple in construction that it can be easily manipulated with one hand, leaving the other to hold the work.

PRICE LIST.

6 inch	-	\$2.50
8 "	-	3.00

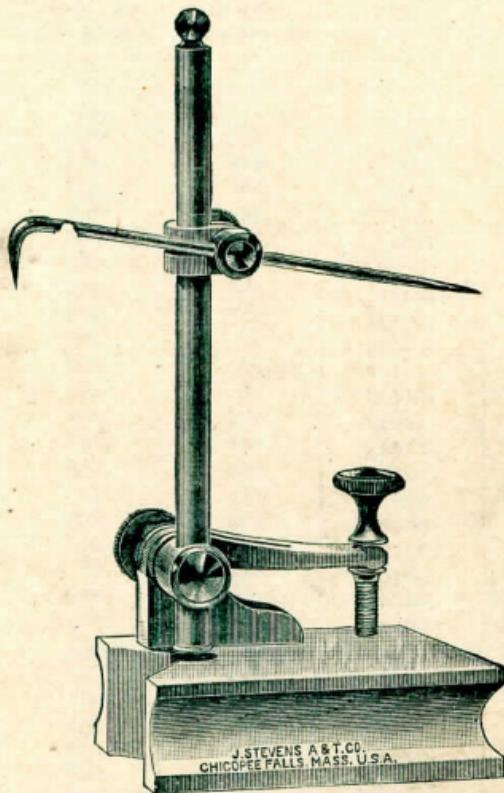
Bluing.

A cheap way to blue small steel pieces—put core sand in a Babbit ladle, heat hot, put work in, shake the ladle over the fire until the required color is obtained.

Tool Makers' Surface Gauge.

(FAY'S PATENT.)

No. 60.



This Gauge is especially designed for fine tool work. It is an "All Steel Tool" standing about 5 inches high. Its base is hardened and ground flat on the bottom. It has a square cut in its front end, adapting it for round work.

A cutter is screwed on the end of the spindle, making a good scratch gauge. The spindle can be set and used in any position within 90 degrees of a complete circle. It occupies a space 4 inches long by $1\frac{3}{4}$ inches high, when the spindle is parallel with the base. Made in one size only.

Price \$2.50.

Improved Soldering or Tinning Acid.

Muratic Acid 1 lb.; put into it all the zinc it will dissolve and 1 oz. of Sal Ammoniac, then it is ready for use.

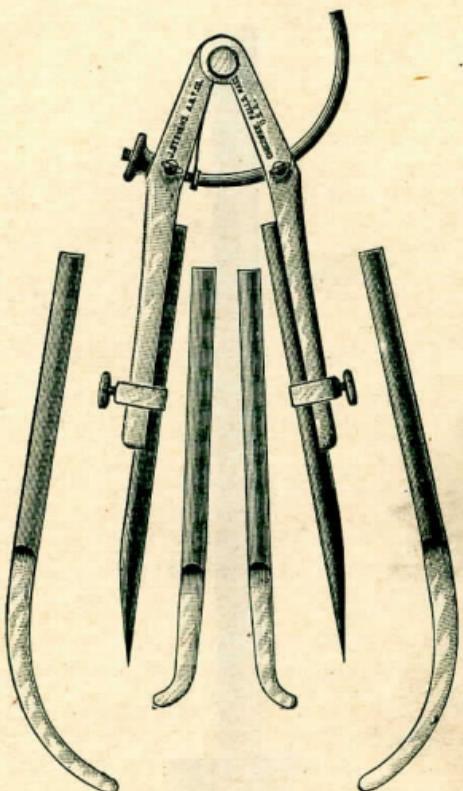
Wire Gauge Used in the United States.

Dimensions of Sizes in Decimal Parts of an Inch.

Number of Wire Gauge.	American or B. & S.	Birmingham or Stub's.	Washburn & Moen Mfg. Co.	Number of Wire Gauge.
000000	.....	.....	.46	000000
00000	.....	.....	.43	00000
0000	.46	.454	.393	0000
000	.40964	.425	.362	000
00	.3648	.38	.331	00
0	.32486	.34	.307	0
1	.2893	.3	.283	1
2	.25763	.284	.263	2
3	.22942	.259	.244	3
4	.20431	.238	.225	4
5	.18194	.22	.207	5
6	.16202	.203	.192	6
7	.14428	.18	.177	7
8	.12849	.165	.162	8
9	.11443	.148	.148	9
10	.10189	.134	.135	10
11	.090742	.12	.12	11
12	.080808	.109	.105	12
13	.071961	.095	.092	13
14	.064084	.083	.08	14
15	.057068	.072	.072	15
16	.05082	.065	.063	16
17	.045257	.058	.054	17
18	.040303	.049	.047	18
19	.03589	.042	.041	19
20	.031961	.035	.035	20
21	.028462	.032	.032	21
22	.025347	.028	.028	22
23	.022571	.025	.025	23
24	.0201	.022	.023	24
25	.0179	.02	.02	25
26	.01594	.018	.018	26
27	.014195	.016	.017	27
28	.012641	.014	.016	28
29	.011257	.013	.015	29
30	.010025	.012	.014	30
31	.008928	.01	.0135	31
32	.00795	.009	.013	32
33	.00708	.008	.011	33
34	.006304	.007	.01	34
35	.005614	.005	.0095	35
36	.005	.004	.009	36
37	.004453	.....	.0085	37
38	.003965	.....	.008	38
39	.003531	.....	.0075	39
40	.003144	.....	.007	40

Extension Dividers.

No. 61.



The base of these Dividers is cast brass instead of malleable iron; this prevents rust. The loops that hold the points are of steel and so arranged that they cannot come off. Both legs have a quick lock; the wing is round wire. There is a positive stop for each point or leg and by pushing them home, they are the same length. All steel parts are nickel-plated. All points to No. 62 will fit them. A very stiff, durable tool.

For Centering Disk and Auxiliary Leg, to be used with this tool, see page 26.

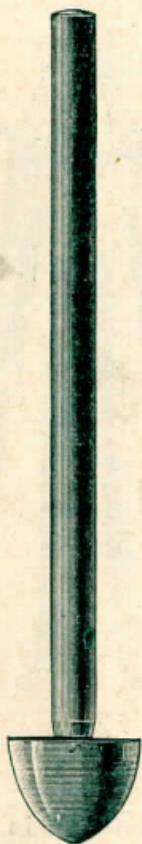
PRICES.

7 inch with Divider points only,	-	-	-	\$1.25
9 " " " " "	-	-	-	1.50
7 " complete	-	-	-	2.25
9 " " "	-	-	-	2.50

Sent complete unless otherwise ordered.

Centering Disk.

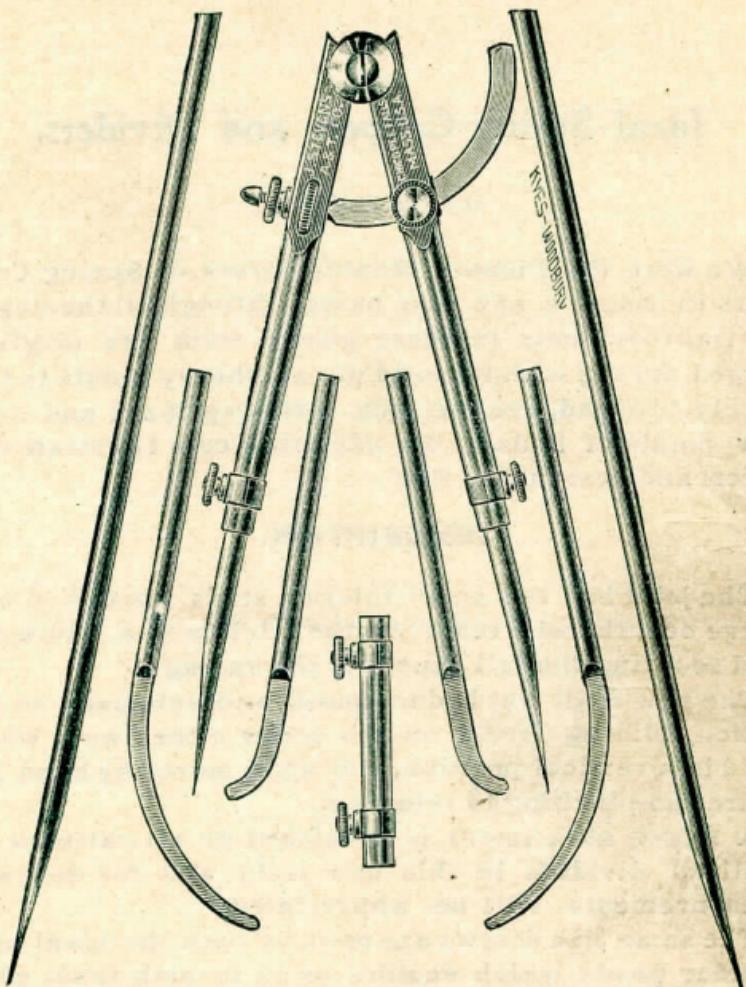
No. 61 A.



With the above Centering Disk circles can be scribed around a hole. By its use, a number of places on work that has heretofore taken much time can be done easily. As the lower half only is used, the top part is cut away and cupped out, to lighten and prevent rolling. It is made of steel and hardened and will fit from $\frac{1}{4}$ inch to 1 inch holes. It can be used in connection with No. 62 or 61 Dividers.

PRICE.

Complete with leg,	-	-	-	50 cents.
Either leg or disk,	-	-	-	25 "



A very useful combination set. The body or legs are made of brass nicely finished and nickel-plated. The set consists of two pairs of points, $5\frac{1}{2}$ inches and 14 inches long; outside and inside calipers and pencil attachment. The long points will scribe a 4 foot circle. The calipers will caliper 16 inches. By interchanging the legs, one can get a number of useful tools. The points are made of good steel, hardened in oil and nickel-plated.

PRICE.

Complete,	- - - - -	\$4.00
Tool with short divider points only	- - - - -	.25
Long or short points per pair,	- - - - -	.50
Outside or inside calipers legs per pair,	- - - - -	.50
Pencil attachment,	- - - - -	.50

Sent complete unless ordered otherwise.

For centering disk and auxiliary leg to be used with tool see page 26.

Ideal Spring Calipers and Dividers.

(FAY'S PATENT.)

We were the Pioneer Manufacturers of Spring Calipers in America, and have passed through all the stages of improvements in these goods, from the original forged spring with its solid nut and heavy points to the nicely-adjusted, even-tension spring split-nut and slender points of to-day; the adjoining cuts illustrate the latest and best in this line.

DESCRIPTION.

The joint has two small fulcrum studs instead of one large one, thereby reducing the friction to a minimum and securing the full benefit of the spring.

The new Split Nut is dust proof, and automatic in its action, sliding freely on the screw either way, when held in a vertical position, and when moved by hand requires no pinching to release it.

A finger attachment is furnished on all calipers as well as dividers in this new style, and for delicate measurements will be appreciated.

The same size screws are used on both the Ideal and Leader grade which enables us to furnish them with either the Ideal Patent or the solid nut. Will mail on receipt of price, either nut in case a different one is wanted than already on the tool when purchased.

PRICE.

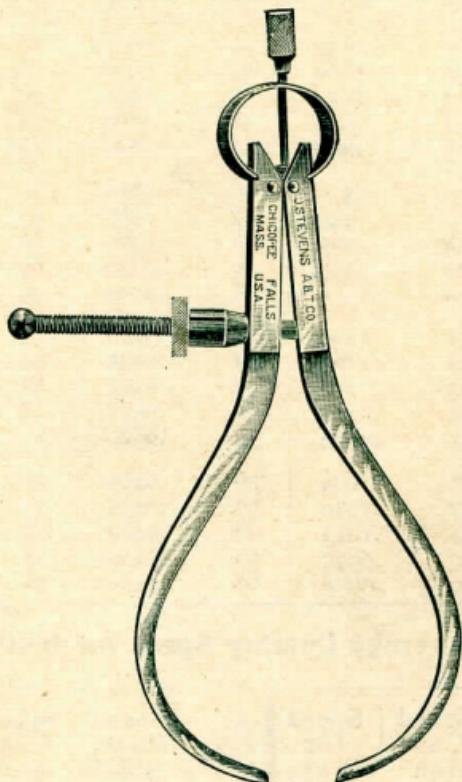
Leg, either one,	\$.35	Screw washer,	-	\$.05
Spring,	- - .25	Thumb attachment,	.15	
Screw,	- - .10	Solid nut,	- - -	.10
" tip,	- - .05	Split "	- - -	.25

All parts interchangeable.

Ideal Spring Caliper.

(FAY'S PATENT.)

No. 63.



The above illustrates our new Outside Ideal Caliper. It is made in five sizes, all of which are furnished with our new split nut, unless otherwise ordered.

PRICE LIST.

2½ inch with split nut,	-	-	-	\$1.15
3 "	"	"	-	1.15
4 "	"	"	-	1.25
5 "	"	"	-	1.25
6 "	"	"	-	1.50

Above sizes with solid nuts, 15 cents less.

Pointer.

Put hard soap on Lag screws, Wood screws or any screw for wood. It will surprise you how much easier they will go in.

AMERICAN OR BROWN & SHARPE

Twist Drill and Steel Wire Gauge.

No.	Dia.	No.	Dia.	No.	Dia.	No.	Dia.
1	.2280	21	.1590	41	.0960	61	.0390
2	.2210	22	.1570	42	.0935	62	.0380
3	.2130	23	.1540	43	.0890	63	.0370
4	.2090	24	.1520	44	.0860	64	.0360
5	.2055	25	.1495	45	.0820	65	.0350
6	.2040	26	.1470	46	.0810	66	.0330
7	.2010	27	.1440	47	.0785	67	.0320
8	.1990	28	.1405	48	.0760	68	.0310
9	.1960	29	.1360	49	.0730	69	.02925
10	.1935	30	.1285	50	.0700	70	.0280
11	.1910	31	.1200	51	.0670	71	.0260
12	.1890	32	.1160	52	.0635	72	.0250
13	.1850	33	.1130	53	.0595	73	.0240
14	.1820	34	.1110	54	.0550	74	.0225
15	.1800	35	.1100	55	.0520	75	.0210
16	.1770	36	.1065	56	.0465	76	.0200
17	.1730	37	.1040	57	.0430	77	.0180
18	.1695	38	.1015	58	.0420	78	.0160
19	.1660	39	.0995	59	.0410	79	.0145
20	.1610	40	.0980	60	.0400	80	.0135

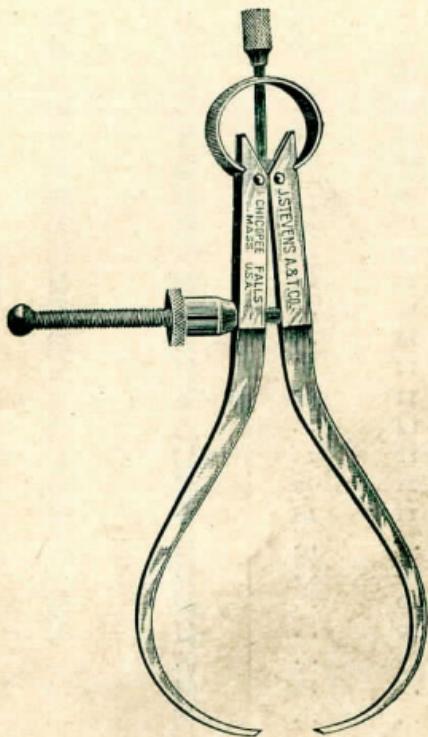
Table of Average Cutting Speed for Drills.

Dia. Drill	Speed Mach. Steel	Speed Cast Iron	Speed for Brass	Dia. Drill	Speed Mach. Steel	Speed Cast Iron	Speed for Brass
$\frac{1}{16}$	1820	2430	3640	$1\frac{1}{16}$	81	114	186
$\frac{1}{8}$	895	1200	1820	$1\frac{1}{8}$	76	105	175
$\frac{3}{16}$	589	790	1200	$1\frac{3}{16}$	70	98	164
$\frac{1}{4}$	433	685	888	$1\frac{1}{4}$	65	92	154
$\frac{5}{16}$	343	462	705	$1\frac{5}{16}$	61	86	145
$\frac{3}{8}$	280	379	585	$1\frac{3}{8}$	57	81	137
$\frac{7}{16}$	237	320	495	$1\frac{7}{16}$	53	76	130
$\frac{1}{2}$	204	277	430	$1\frac{1}{2}$	50	71	124
$\frac{9}{16}$	178	242	379	$1\frac{9}{16}$	47	67	118
$\frac{5}{8}$	157	215	338	$1\frac{5}{8}$	44	63	112
$\frac{11}{16}$	142	193	305	$1\frac{11}{16}$	41	60	107
$\frac{3}{4}$	127	174	277	$1\frac{3}{4}$	39	57	102
$\frac{13}{16}$	115	158	353	$1\frac{13}{16}$	36	54	97
$\frac{7}{8}$	105	145	233	$1\frac{5}{8}$	34	51	93
$\frac{15}{16}$	96	133	216	$1\frac{15}{16}$	32	48	89
1	89	123	200	2	30	46	86

Ideal Thread Caliper.

(FAY'S PATENT.)

No. 64.



This Thread Caliper is the same as No. 63, excepting that the points are flattened wide and thin, for caliperating both the top and bottom of taps, screws, etc.

PRICE LIST.

3 inch, with split nut,	-	-	-	\$1.15
4 " " " "	-	-	-	1.25
5 " " " "	-	-	-	1.25

Above sizes with solid nuts, 15 cents less

Tap Drills.

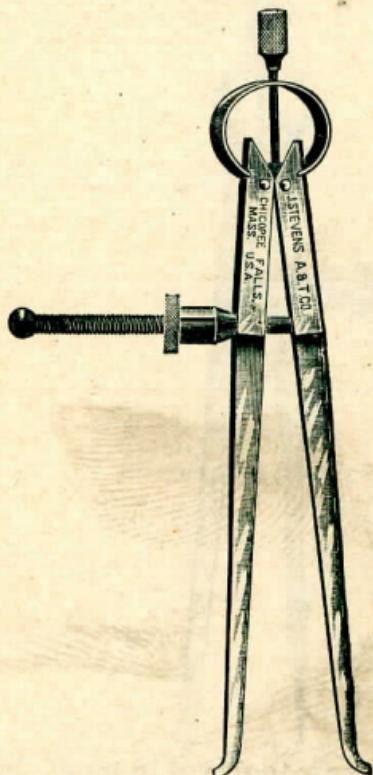
For Taps $\frac{1}{4}$ to 2 Inches.

Diam. of Tap	No. Threads to Inch.			Drill for V Thread.		
$\frac{1}{4}$	16	18	20	$\frac{5}{32}$	$\frac{5}{32}$	$\frac{11}{64}$
$\frac{9}{32}$	16	18	20	$\frac{3}{16}$	$\frac{13}{64}$	$\frac{13}{64}$
$\frac{5}{16}$	16	18	..	$\frac{7}{32}$	$\frac{15}{64}$	..
$\frac{11}{32}$	16	18	..	$\frac{1}{4}$	$\frac{17}{64}$	..
$\frac{3}{8}$	14	16	18	$\frac{1}{4}$	$\frac{9}{32}$	$\frac{9}{32}$
$\frac{13}{32}$	14	16	18	$\frac{19}{64}$	$\frac{21}{64}$	$\frac{21}{64}$
$\frac{7}{16}$	14	16	..	$\frac{21}{64}$	$\frac{11}{32}$	..
$\frac{15}{32}$	14	16	..	$\frac{23}{64}$	$\frac{3}{8}$	..
$\frac{1}{2}$	12	13	14	$\frac{3}{8}$	$\frac{25}{64}$	$\frac{25}{64}$
$\frac{17}{32}$	12	13	14	$\frac{13}{32}$	$\frac{27}{64}$	$\frac{27}{64}$
$\frac{9}{16}$	12	14	..	$\frac{7}{16}$	$\frac{29}{64}$	..
$\frac{19}{32}$	12	14	..	$\frac{15}{32}$	$\frac{31}{64}$	..
$\frac{5}{8}$	10	11	12	$\frac{15}{32}$	$\frac{1}{2}$	$\frac{1}{2}$
$\frac{21}{32}$	10	11	12	$\frac{1}{2}$	$\frac{17}{32}$	$\frac{17}{32}$
$\frac{11}{16}$	11	12	..	$\frac{9}{16}$	$\frac{9}{16}$	..
$\frac{23}{32}$	11	12	..	$\frac{19}{32}$	$\frac{19}{32}$	..
$\frac{3}{4}$	10	11	12	$\frac{19}{32}$	$\frac{5}{8}$	$\frac{5}{8}$
$\frac{25}{32}$	10	11	12	$\frac{5}{8}$	$\frac{21}{32}$	$\frac{21}{32}$
$\frac{13}{16}$	10	..	..	$\frac{21}{32}$	..	..
$\frac{27}{32}$	10	..	..	$\frac{11}{16}$	..	..
$\frac{7}{8}$	9	10	..	$\frac{45}{64}$	$\frac{23}{32}$	..
$\frac{29}{32}$	9	10	..	$\frac{47}{64}$	$\frac{3}{4}$	..
$\frac{15}{16}$	9	..	..	$\frac{49}{64}$	..	..
$\frac{31}{32}$	9	..	..	$\frac{51}{64}$	..	..
1	8	..	..	$\frac{13}{16}$	..	..
$1\frac{1}{32}$	8	..	..	$\frac{53}{64}$	..	..
$1\frac{1}{8}$	7	8	..	$\frac{29}{32}$	$1\frac{5}{16}$	..
$1\frac{5}{32}$	7	8	..	$\frac{15}{16}$	$1\frac{31}{32}$	..
$1\frac{1}{4}$	7	..	..	$1\frac{1}{32}$	..	..
$1\frac{9}{32}$	7	..	..	$1\frac{1}{16}$	..	..
$1\frac{3}{8}$	6	..	..	$1\frac{1}{8}$	..	..
$1\frac{13}{32}$	6	..	..	$1\frac{5}{32}$	..	..
$1\frac{1}{2}$	6	..	..	$1\frac{15}{64}$	..	..
$1\frac{17}{32}$	6	..	..	$1\frac{3}{32}$	..	..
$1\frac{5}{8}$	5	$5\frac{1}{2}$	..	$1\frac{9}{32}$	$1\frac{5}{16}$	..
$1\frac{21}{32}$	5	$5\frac{1}{2}$	..	$1\frac{5}{16}$	$1\frac{11}{32}$	..
$1\frac{3}{4}$	5	..	..	$1\frac{13}{32}$	..	..
$1\frac{25}{32}$	5	..	..	$1\frac{7}{16}$	..	..
$1\frac{7}{8}$	$4\frac{1}{2}$	5	..	$1\frac{17}{32}$	$1\frac{17}{32}$	..
$1\frac{29}{32}$	$4\frac{1}{2}$	5	..	$1\frac{9}{16}$	$1\frac{9}{16}$	..
2	$4\frac{1}{2}$	..	..	$1\frac{21}{32}$	..	..

Ideal Inside Caliper

(FAY'S PATENT.)

No. 65.



The above cut illustrates our Inside Ideal Calipers, which are made in following sizes: 3, 4, 5, and 6 inches.

In using our New Split Nut we claim all the security and smoothness of turning that a solid nut possesses, with the added advantage of a quick adjustment.

PRICES.

3 inch with split nut,	-	\$1.15
4 " " " "	-	1.25
5 " " " "	-	1.25
6 " " " "	-	1.50

Above sizes with solid nuts 15 cents less.

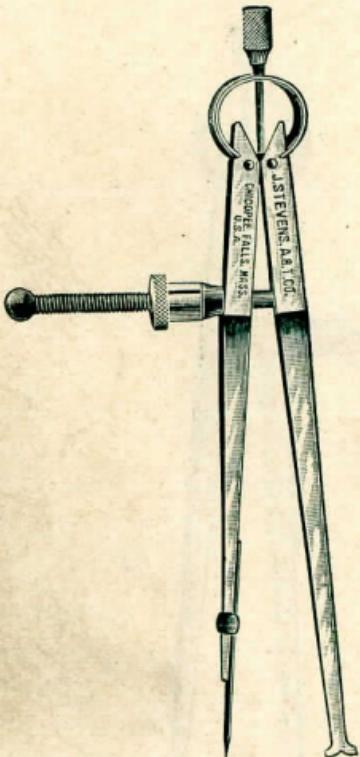
Depreciation of First Cost of Machinery, a Year.

	Depr'c'tion.	Wear & Tear	Total.
Engines, -	3 per cent.	3 per cent.	6 per cent.
Boilers, - -	7 " " "	3 " " "	10 " " "
Machines, -	5 " " "	3 " " "	8 " " "
Gearing, &c.	3 " " "	2½ " " "	5½ " " "
Bands & Belts,		45 " " "	45 " " "

Ideal Hermaphrodite.

(FAY'S PATENT.)

No. 66.



This is an entirely new tool, not in name, but in principle. It can be used either inside or outside or both at the same time. The divider point is of Stub's Steel Wire and can be adjusted up or down to fit the work. The spring split nut and thumb attachment are the same as on our Ideal calipers and dividers.

Price, 5-inch, \$1.50. With Solid Nut, \$1.35.

Ready March 1, 1898.

The Friction of Metal on Metal, without Lubrication.

May be taken at $\frac{1}{6}$ of the weight up to 40 lbs. per sq. inch

" " " $\frac{1}{5}$ " " " " " " 100 " " " "

Brass on cast iron $\frac{1}{4}$ " " " " " " 800 " " " "

W'r't " " " $\frac{1}{3}$ " " " " " " 500 " " " "

Well oiled with tallow at $\frac{1}{10}$ of the weight.

" " " olive oil at $\frac{1}{3}$ of "

800 lbs. per inch forces out the oil.

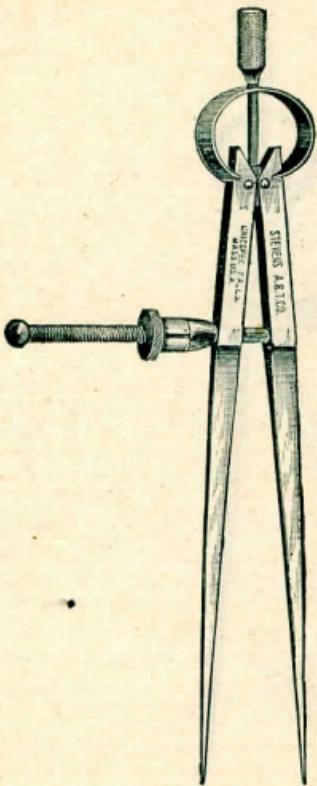
Friction of Journals under ordinary circumstances $\frac{1}{30}$ of weight.

Friction of Journals well oiled sometimes only $\frac{1}{60}$ of weight.

Ideal Spring Dividers.

(FAY'S PATENT.)

No. 67.



They are manufactured from good steel and they will harden in oil. These Dividers are made *rigid*, with special care and will scribe a circle with practically no side deflection.

PRICE LIST.

2½ inch with Split Nut,	-	-	-	\$1.15
3 "	"	"	-	1.15
4 "	"	"	-	1.40
5 "	"	"	-	1.40
6 "	"	"	-	1.75

Above sizes with solid nut, 15 cents less.

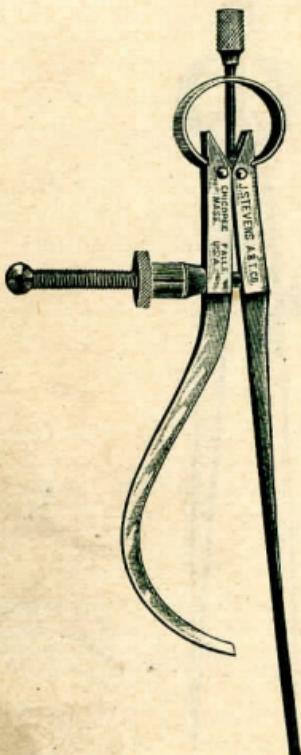
Pointer.

Sal Ammoniac and iron shavings or filings, make rust-joints.

Ideal Keyhole Caliper.

(FAY'S PATENT.)

No. 68.



If this Caliper were better understood, it would be more widely used. It occupies a place that is filled by no other tool on the market. For centering a hole, either in a flat or round piece, it is indispensable; also for caliper work close to an edge, as in a shaper or planer chuck, where it would be impossible to use a bent leg.

PRICE LIST.

3 inch, with split nut,	- - - -	\$1.15
4 " " " "	- - - -	1.25

Above sizes with solid nut, 15 cents less.

Tempering Liquid.

Saltpetre, Sal Ammoniac, and Alum, of each 2 oz., salt, 1 1/2 lbs., soft water, 3 gallons. Never heat over cherry-red; draw no temper.

ALLOYS.

ALLOYS.

	Tin.	Copper.	Zinc.	Antimony.	Lead.	Bismuth.
Brass, engine bearing . . .	13	112	1/4	...	...	...
Tough brass, engine work . .	15	100	15	...	...	...
" for heavy bearings . .	25	160	5	...	...	...
Yellow brass, for turning . .	...	2	1	...	...	...
Flanges to stand brazing . .	...	32	1	...	1	...
Bell-metal	5	16	...	...	...	...
Babbitt's metal	10	1	...	1	...	...
Brass, locomotive bearings . .	7	64	1	...	...	...
" for straps and glands .	16	130	1	...	...	...
Muntz's sheathing . . . . .	...	6	4	...	...	...
Metal to expand in cooling . .	...	...	...	2	9	1
Pewter	100	...	...	17	...	...
Spelter . . . . .	...	1	1	...	...	...
Statuary bronze	2	90	5	...	2	...
Type-metal, from . . . . .	...	...	...	1	3	...
" to . . . . .	...	...	...	1	7	...
SOLDERS.						
For lead . . . . .	...	1	...	...	1 1/2	...
" tin . . . . .	...	1	...	...	2	...
" pewter	2	...	...	...	1	...
" brazing (hardest) . . .	...	3	1	...	...	...
" " (hard) . . . . .	...	1	1	...	...	...
" " (soft)	1	4	3	...	...	...
" " " or	2	...	...	1	...	...

Leader Calipers and Dividers.

(FAY'S PATENT.)

To those of our customers who wish to purchase a cheaper caliper or divider than our Ideals, we would call attention to our Leaders.

These tools embrace all the practical points of the Ideals, and are just as accurate and durable; but are cheaper only in style, finish, and detail of manufacture. We take pleasure in recommending them to our patrons as the best second-grade calipers made.

These tools have been greatly improved recently, by adding a finger-piece (see page 39), that passes through the spring, and anchors it firmly to the legs by screwing into the yoke at the joint.

The legs are rounded on both edges, and all sizes will caliper from $\frac{1}{4}$ to $\frac{1}{2}$ inch larger diameter than their lengths.

Duplicate Leader Parts.

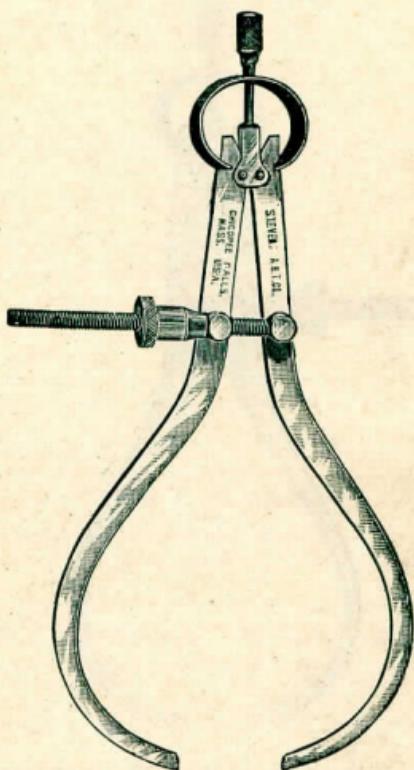
Leg (either one),	-	-	-	\$.25
Spring, -	-	-	-	.25
Leg Yoke,	-	-	-	.10
Screw, -	-	-	-	.10
Solid Nut,	-	-	-	.15
Screw Stud, -	-	-	-	.10
Ideal Patent Nut,	-	-	-	.25
Washer,	-	-	-	.05
Thumb Attachment,	-	-	-	.15

All parts are interchangeable.

Leader Outside Caliper.

(FAY'S PATENT.)

No. 70.



The above outside Calipers are manufactured in six sizes and are furnished with solid nuts, unless otherwise ordered. See description, page 38.

PRICE LIST.

2½ inch with solid nut	.65	;	with split nut,	.90
3 " " " "	.70	;	" "	.95
4 " " " "	.75	;	" "	1.00
5 " " " "	.80	;	" "	1.05
6 " " " "	.85	;	" "	1.10
8 " " " "	1.00	;	" "	1.25

Sent with solid nut unless otherwise ordered.

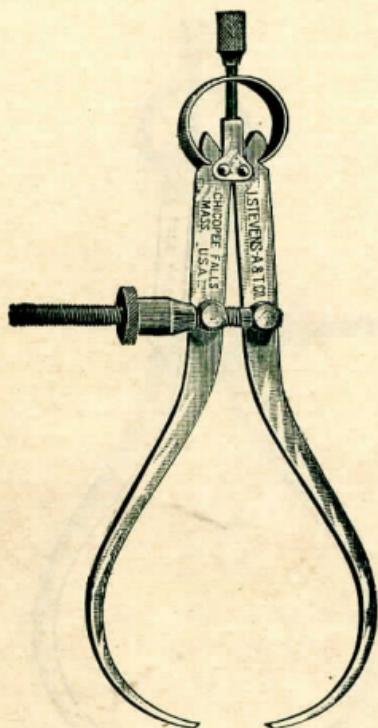
Babbit Metal.

Copper, - - - -	4 lbs.
Regulus of Antimony, - - - -	8 "
Banca Tin, - - - -	96 "

Leader Thread Caliper.

(FAY'S PATENT.)

No. 71.



This Caliper is similar to No. 70, excepting that the points are flattened wide and thin for caliperizing both the tops and bottoms of taps and screws, same as No. 64 Ideal.

PRICE LIST.

3 inch, with solid nut, \$.75;	with split nut, \$ 1.00
4 " " " " .90;	" " " 1.15
5 " " " " 1.00;	" " " 1.25

Sent with solid nut unless otherwise ordered.

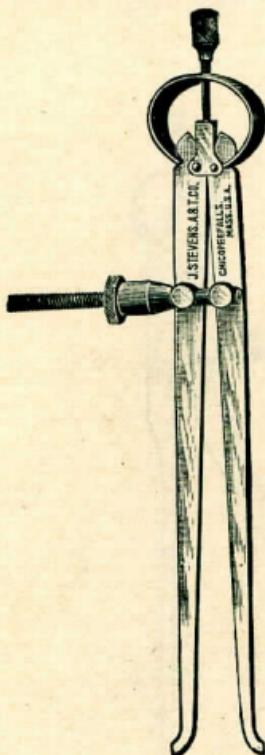
Bluing.

Ten lbs. saltpetre, 1 lb. black oxide of manganese. Heat (in a crucible) to a point that will ignite pine sawdust, stir thoroughly. Suspend work in a wire basket (keeping basket in motion), until proper color is obtained.

Leader Inside Caliper.

(FAY'S PATENT.)

No. 72.



The above Calipers are manufactured in four sizes, and caliper from $\frac{1}{4}$ to $\frac{1}{2}$ inch more in diameter than their length.

PRICE LIST.

3 inch, with solid nut,	\$.70;	with split nut,	\$.95
4 "	" "	" .75;	" " " 1.00
5 "	" "	" .80;	" " " 1.05
6 "	" "	" .85;	" " " 1.10
8 "	" "	" 1.00;	" " " 1.25

Sent with solid nut unless otherwise ordered.

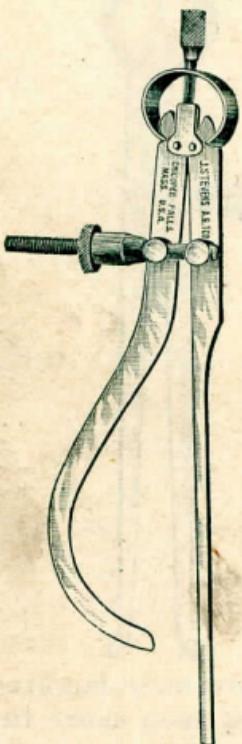
To Lessen Friction in Machinery.

Grind together black lead with four times its weight of tallow. Camphor is sometimes used, 7 lbs. to the hundred weight.

Leader Keyhole Caliper.

(FAY'S PATENT.)

No. 73.



An indispensable tool for centering holes either in flat or round pieces. Same as No. 68. See page 36.

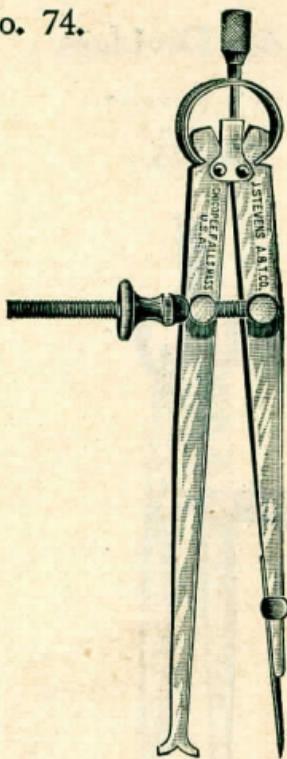
PRICE LIST.

3 inch, with solid nut, \$.70;	with split nut, \$.95
4 " " " " .75;	" " " 1.00

Sent with solid nut unless otherwise ordered.

No. 74.

(FAY'S PATENT.)



Same as No. 66, made after the pattern of Leader, Calipers and Dividers. The divider point is of Stub's steel wire.

PRICE.

5 inch, solid nut, \$1.10; with split nut, \$1.35.
Sent with solid nut unless otherwise ordered.

Ready May 1, 1898.

Rules for Calculating Speed.

The diameter of driven given to find its number of revolutions.

Rule.—Multiply the diameter of the driver by its number of revolutions and divide the product by the diameter of the driven. The quotient will be the number of revolutions of the driven.

The diameter and revolutions of the driver being given to find the diameter of the driven, that shall make any number of revolutions.

Rule.—Multiply the diameter of the driver by its number of revolutions and divide the product by the number of required revolutions of the driven. The quotient will be its diameter.

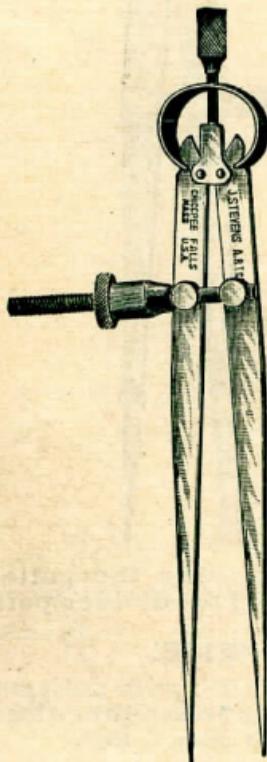
To ascertain the size of pulleys for given speeds.

Rule.—Multiply all the diameters of the drivers together and all the diameters of driven together; divide the drivers by the driven. Multiply the answer by the known revolutions of main shaft.

Leader Dividers.

(FAY'S PATENT.)

No. 75.



The points in these Dividers are made of good steel and will harden readily in oil.

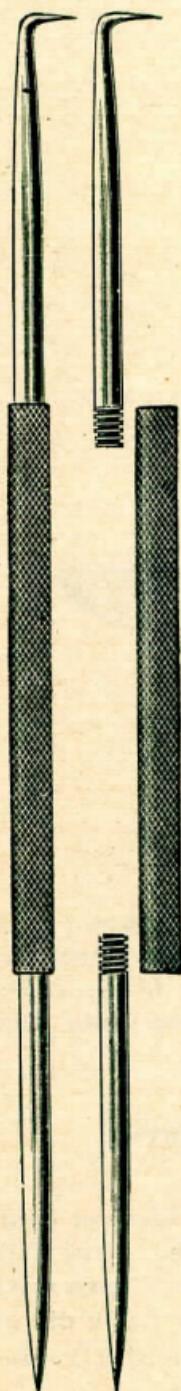
PRICE LIST.

2½ inch, with solid nut,	\$.65;	with split nut,	\$.90
3 " " "	.70;	" " "	.95
4 " " "	.75;	" " "	1.00
5 " " "	.80;	" " "	1.05
6 " " "	.85;	" " "	1.10
8 " " "	1.10;	" " "	1.35

Sent with solid nut unless otherwise ordered.

Pointer.

Strong sal soda water or soapy water is much better than clean water to use where water cuts are being taken, either on lathe or planer.



Scriber.

No. 80.

This Scriber is made of good Steel, nicely tempered, and will scratch through scale without blunting. It is firmer to hold than the old twisted scratch-awl and easier to repair if either point breaks.

Sent to any address, postage prepaid, on receipt of price.

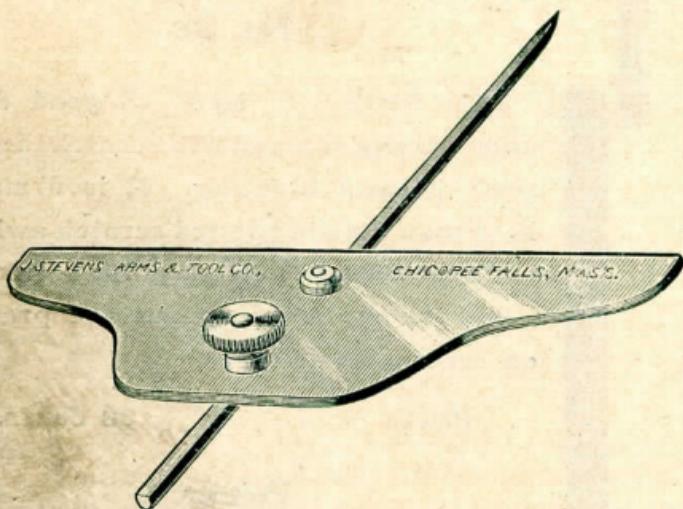
Price, - - - - - 30 Cents.

Pointer.

Put a piece of Rosin the size of a walnut, into your Babbit; stir thoroughly, then skim. It makes poor Babbit run better, and improves it. Babbit heated just hot enough to light a pine stick, will run in places with the rosin in, where without it, it would not. It is also claimed that rosin will prevent blowing when pouring in damp boxes.

Depth Gauge.

No. 85.



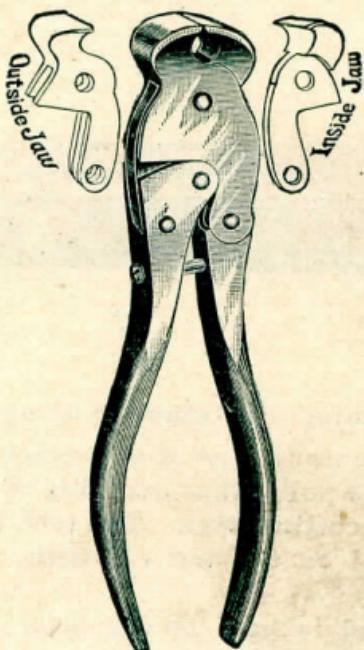
This tool is made of sheet steel nicely finished. The edge is ground straight and beveled. By removing the needle it makes a good straight-edge for filing short work. The needle is ground flat on one side and pointed.

Price, - - - - 50 Cents.

In laying out work on planed surfaces of steel or iron use blue vitriol and water on the surface. This will copper-over the surface nicely, so that all lines will show plainly. If on oily surfaces, add a little oil of vitriol; this will eat the oil off and leave a nicely coppered surface.

Bicycle Spoke Nipper.

No. 91.



This Nipper combines great power with rigidity. Wire can be cut at either extreme end of the jaws without the opposite end closing faster than the cutting end, as is the case with all other compound nippers.

The cutting-jaws will conform to the inside of a bicycle rim and will cut off the spokes just as close as required.

All our Nippers are tested before leaving the factory. All parts are interchangeable, so in case a jaw breaks, a new one can be mailed.

PRICES.

5 inch, - - - - -	\$1.50
Jaws, per pair, - - - - -	1.00
Jaws, each, - - - - -	.50

In ordering specify as per cut which jaw is wanted.

Pointer.

Use kerosene oil (coal oil) for drilling or turning aluminum.

Universal Threading Tool.

No. 95.



Special advantages obtained in using this tool:

1st. The circular shape of the cutter insures a good backing for the point, thus avoiding the constant snapping off of the cutting-edge. The tool, being round and always ground on the top of tooth, never alters its shape.

2d. The head is held to the body by the tenon or round pin, whereby it may be swiveled to any desired position, allowing it always to lie with the lead of the screw being cut, thereby avoiding any drag at the head, as is so common in the other tools of this description.

3d. The cutters are made with a taper shank, which, by means of binding screw, are drawn into the holder, thus keeping the cutter from turning when under pressure. They are relieved back same as a form cutter.

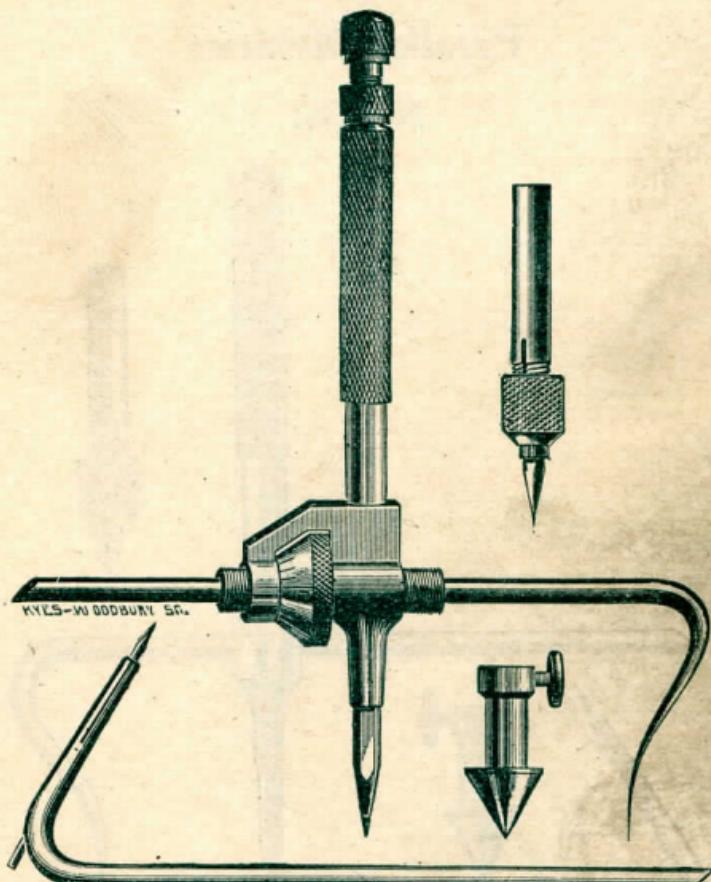
It must always be set on the center, and will cut either right or left-hand threads, or in fact any form desired. Always grind on the face of the tool.

The holders are all ground true and square before hardening.

All screws are hardened and all parts are interchangeable.

The V thread tools are all ground to an angle of 60 degrees after hardening.

PRICE, \$3.50.



We do not claim this tool is a substitute for the ordinary divider so long in use by mechanics; it has a field of its own. In laying out work on a surface, as it ordinarily comes from the planer, it will be found invaluable, the point of pressure being directly over the stationary point of tool. With ordinary care there will be no trouble with the tool jumping from center punch mark.

A micrometer adjustment is added so that it reads to $\frac{1}{1000}$ of an inch.

A Pump center can be furnished with tool, by means of which a circle can be scribed around a drilled hole, the bushing of a drill jig or other similar work.

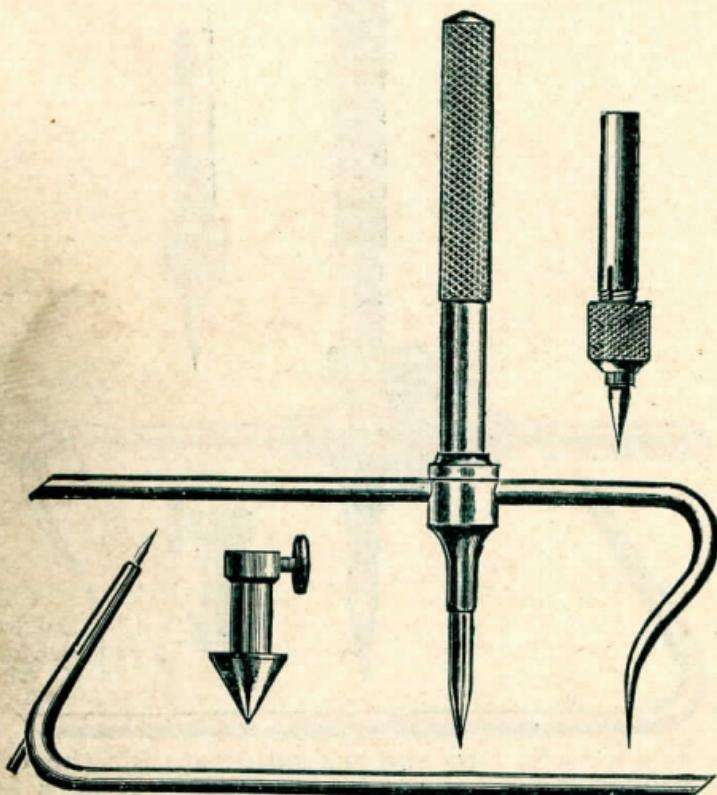
The marking parts are made of the best of tool steel with points carefully hardened. The regular size will draw a 7-inch circle.

PRICES.

Tool alone without extras,	-	-	-	\$2.00
Pump Center,	-	-	-	.25
Pencil Holder,	-	-	-	.50
Needle Point,	-	-	-	.50
Long bar to scribe 24 inch circle,	-	-	-	.50
Complete with Pump Center, Pencil Holder, Long Bar and Needle Point,	-	-	-	3.75

Parallel Dividers.

No. 111.



This tool is the same as our No. 110, except that there is no micrometer adjustment.

A Pump center to No. 110 will also fit here.

PRICE.

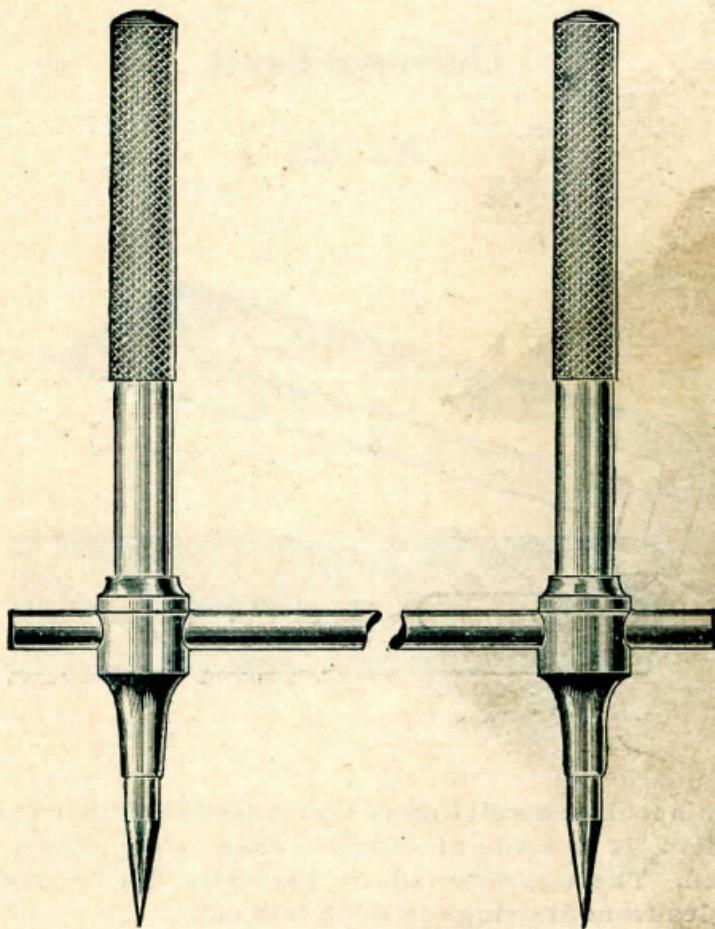
Tool Complete,	\$1.75
Pump Center, . . . . .	.25
Pencil Holder, . . . . .	.50
Needle Point, . . . . .	.50
Long Bar, to scribe 24-in. circle,	.50

Pointer.

Use turpentine instead of oil, when drilling hard steel, saw plate, etc. It will drill readily when you could not touch it with oil.

Trammel Points.

No. 112.



This tool consists of two bodies of our No. 111 tool, together with a round bar 18 inches in length, making an excellent pair of Trammel Points, finely finished, of which any mechanic would feel proud.

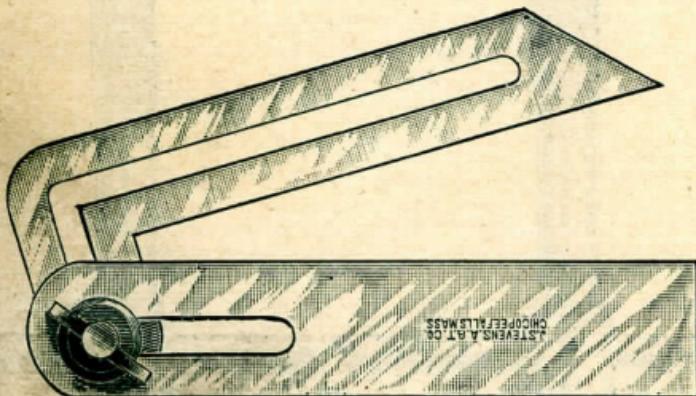
PRICE, \$1.50.

Tempering Liquid.

Salt $\frac{1}{2}$ teacupful, saltpetre $\frac{1}{2}$ oz., pulverized alum. 1 teaspoonful, soft water 1 gal. Never heat over a cherry-red, nor draw any temper.

Universal Bevel.

No. 125.



This tool is so well known that it needs but little explanation. It is made of crucible sheet steel, finely finished. The opposite side is perfectly flat for taking angles from drawings or work laid out.

PRICE.

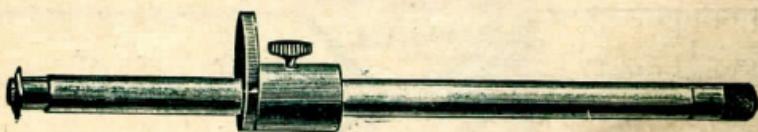
1 $\frac{1}{4}$ inch,	-	-	-	\$1.25
3 " -	-	-	-	1.50

Pointer.

To prevent rust on tools use Vaseline, to which a small amount of powdered gum camphor has been added; heat together over a slow fire.

Adjustable Scratch Gauge.

No. 130.



The best scratch gauge made. The head is made of steel thoroughly hardened and eccentric in shape, so that it can be worked close to shoulders and in places where with others the head would be in the way. A fine adjustment is gained by a screw that goes through the tube its entire length. The cutter scribes a very fine line.

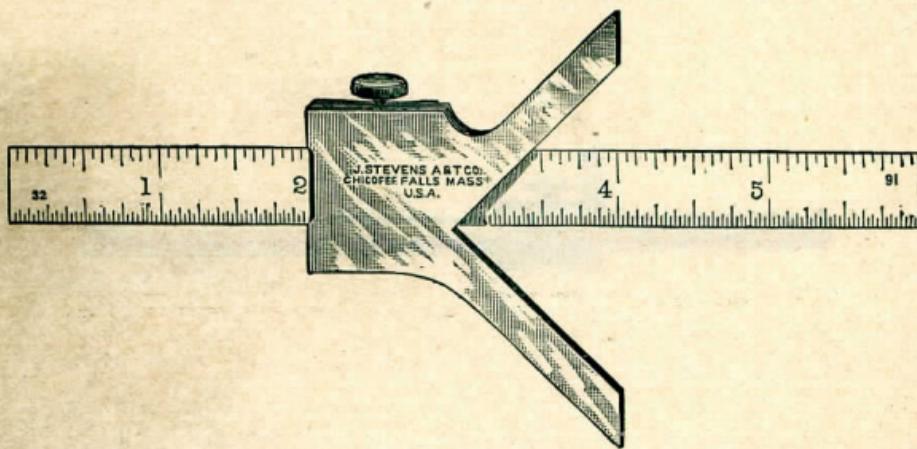
PRICE, \$1.75.

Pointer.

To copper the surface of iron or steel wire, have the wire perfectly clean, then wash with the following solution, when it will present at once a coppered surface: Rain water, three pounds; sulphate of copper, one pound.

Tool-maker's Patent Center Square.

No. 137.



This is by far the best center square yet put on the market. It is all steel, nicely finished and of a very neat design. The rule is 6 inches long by $\frac{1}{2}$ inch wide. The back edge of the head is beveled so it can be used as a depth gauge. This tool will please every tool maker and machinist.

PRICE, \$2.25.

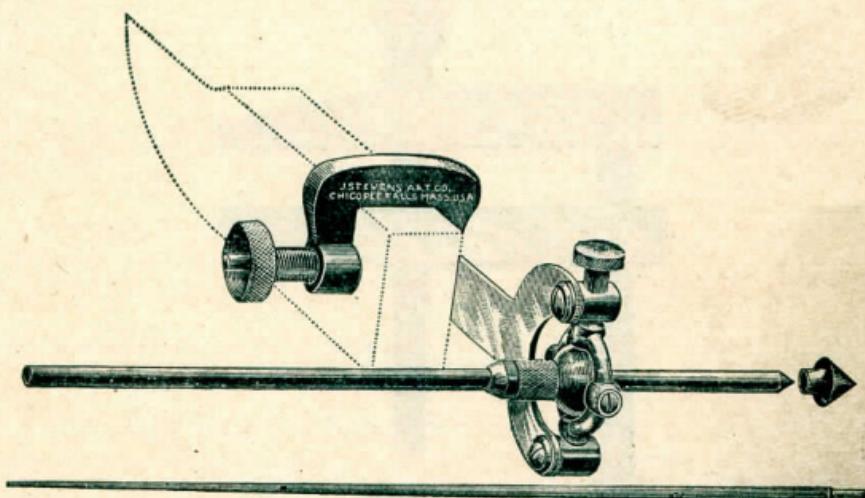
Pointer.

To harden small tools or articles that are likely to warp in hardening, heat very carefully, and insert in a raw potato, then draw the temper as usual. A bar of hard soap is also good, but will not make the tool as hard as the potato will.

Center Indicator.

(FAY'S PATENT.)

No. 140.



This tool is coming into more general use every year, as the fine requirements of work make its use imperative. It is constructed with a ball joint and provision is made so that it may be operated either with the universal or oscillating movement. The ball is provided with a chuck for binding the point in any position. The pointer tip is made of lancewood, which experience has proven as much better than steel, in that it reduces the vibration considerably. The flat steel yoke is tempered, providing a flexible spring for the pointer in place of a shank of soft steel or iron. We substitute a good steel clamp, which fastens the indicator to the shank end of any lathe tool. This will be found a great convenience, as it will occupy less room in the tool-chest. All wear can be taken up nicely.

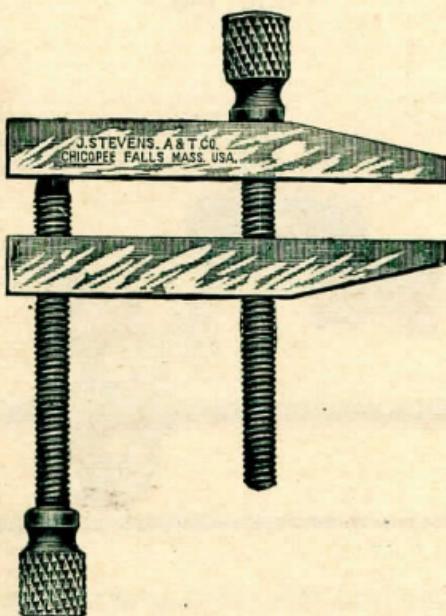
PRICE, \$2.50.

Pointer.

Rosin on the blacksmith's forge, improves and toughens steel. When the tool is hot, dip it into the rosin, then hammer.

Tool-maker's Clamp.

No. 145.



This tool is made in four sizes as below. It is an ALL STEEL TOOL, thoroughly case-hardened and finished. Tool-makers and machinists have long wanted a tool of this kind for holding small work together, in drilling, tapping, etc. It was made for our own tool-makers; we at once saw its value and placed it on the market.

PRICE.

1 $\frac{1}{2}$ inch,	-	-	-	-	\$.50
2 $\frac{1}{8}$ "	-	-	-	-	.65
2 $\frac{3}{4}$, "	-	-	-	-	.75
3 $\frac{3}{8}$ "	-	-	-	-	.90

Anti-Friction Alloy for Journal Boxes.

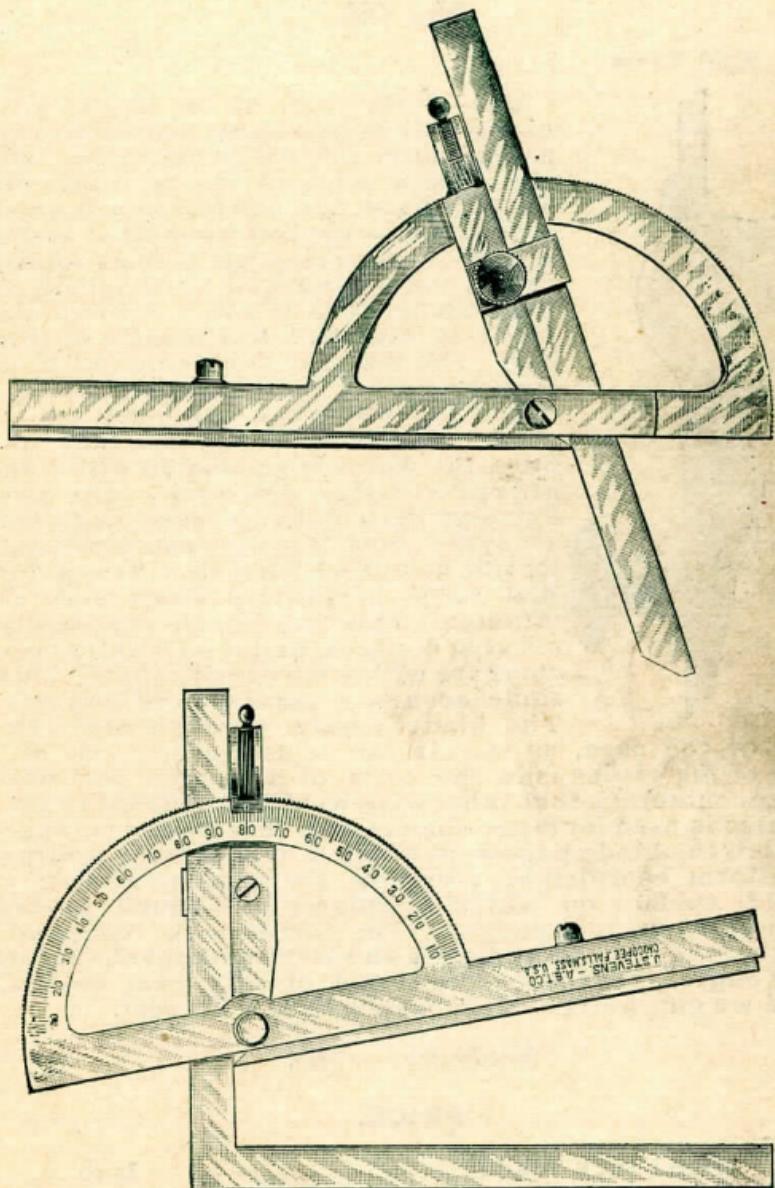
Zinc,	-	-	17 parts
Copper,	-	-	1 "
Antimony	-	-	1 $\frac{1}{2}$ "

This possesses unsurpassable Anti-Friction qualities and does not require the protection of outer castings of a harder metal.

Micrometer Protractor.

(FAY'S PATENT).

No. 150.



(For description see page 58.)

Micrometer Protractor.—Continued.

(FAY'S PATENT.)

No. 150.

End View.



This Protractor, as its name indicates, will register any degree or any sub-division thereof accurately. On the outside edge of the arc are cut V-shaped notches, one for each degree. A double-threaded worm located at the end of the swinging bar is so arranged that it can be engaged or disengaged from the notches at will. The sliding blade is clamped frictionally to this bar. The worm is double-threaded so that one-half of its revolution will advance the worm-bar one notch or degree. One side of the case that confines the worm is graduated with a degree of 20 equal divisions. The two extreme lines indicate even degrees; all of the short lines are sub-divisions. By this means we furnish a Protractor that reads accurately down to three minutes. This tool can be repeatedly set at 90 degrees, and it will uniformly compare with a hardened square. This same accuracy applies to all degrees.

The blade passes through the center of the case, so that it can be used either side up; one of the blades is in the form of a square, and will produce angles that otherwise would be difficult to get. It also is used for taper shanks, etc. Into the slot through which the blade passes is fitted a frictionally sliding platform completely covering the slot, providing a solid surface on which templates and round tapers can be accurately gauged. The blades lock independently; they can be slid back and forth without changing the angle. This tool is light and of very neat design, and we guarantee it to be mechanically correct.

Ready May 1, 1898.

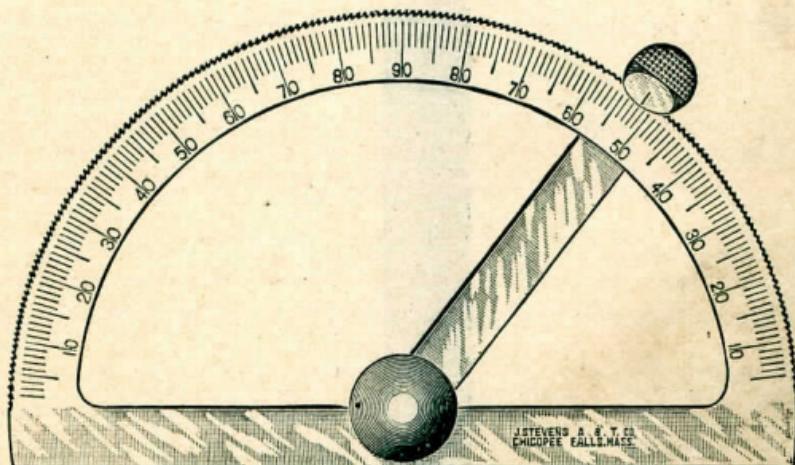
PRICE.

With 7 inch blade,	-	-	-	\$5.00
" " " " and square,	-	-	-	6.00
Morocco case, extra,	-	-	-	.75

Angle Indicator

(FAY'S PATENT.)

No. 151.



This tool is just what its name implies. It is to be used in connection with a universal bevel for transferring any given angle. It will produce a given degree as accurately as our Micrometer Protractor, but not the minutes. It is nicely graduated from 0 to 90, from both ends, and well finished. One should be owned by every mechanic, tool-maker, machinist, cabinet-maker, carpenter, draughtsmen, and tinsmith. In fact any one who desires angles will find this tool just what he wants.

PRICE, \$1.00.

To Restore Burnt Steel and Improve Poor Steel.

Borax, 3 oz.; Sal ammoniac, 8 oz.; prussiate of potash, 3 oz.; blue clay, 2 oz.; rosin, 1½ lbs.; water, 1 gill; alcohol, 1 gill. Put all over a slow fire, let it simmer until it dries to a powder. Heat the steel not above a cherry-red, dip into this powder and afterward hammer.

Shot Plumb-bob.**No. 160.**

This Plumb-bob is made of steel with hardened points, polished, nickle-plated, and filled with mustard-seed shot. The head is made spool-shaped, to provide for the line. A good silk line goes with each bob.

PRICE.

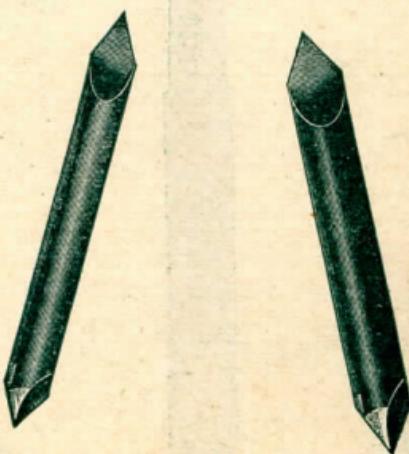
4½ inches long, by $\frac{1}{2}$ inch in diameter,	\$1.00
6 " " " $\frac{3}{4}$ " " " 1.25	
7 " " " 1 " " " 1.50	

Pointer.

Varnish on joints, ground or packed, is better than the average red lead. It dries hard and makes a good joint.

Center Reamers.

No. 161.



The Center Reamers are made of the best drill rod we can find. They are nicely hardened, two styles are made, one on each end. We use them in our own shop, and they give us good satisfaction.

PRICE.

$\frac{3}{4}$ and $\frac{5}{8}$ inch, - - - - - 25 cents

Ready March 1, 1898.

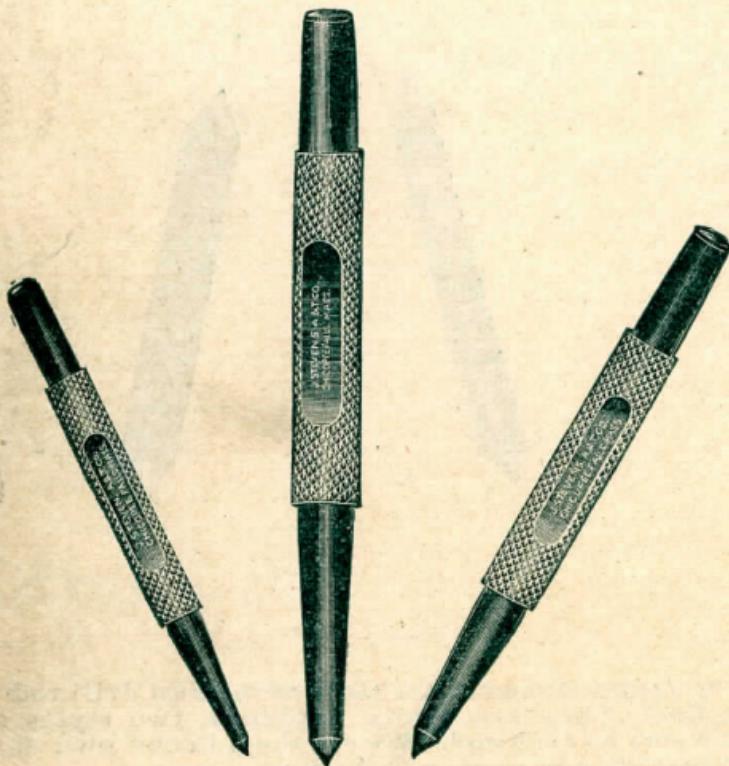
Tinning Surfaces.

Articles of brass or copper boiled in a solution of stannate of potassa mixed with turnings or scraps of tin, in a few moments become covered with a firmly attached layer of fine tin.

A similar effect is produced by boiling the articles with tin turnings or scraps and caustic alkali, or cream of tartar. In either way, articles made of copper or brass may be easily and perfectly tinned.

Center Punches

No. 162.



These center punches are made in three sizes and well knurled in the center. They are made from the best drill rod we can find, and are used in our own shop with perfect satisfaction.

PRICES.

$\frac{1}{4}$, $\frac{5}{16}$ or $\frac{3}{8}$ inch diameter, - - 20 cents each.

To Soften Steel.

Cover it over with tallow, heat to a cherry-red in a charcoal fire, and let it cool of itself.

Bull-Dog Wrench.

No. 163.



This little tool is made of steel, nicely finished, and will hold any tool that can be put into it—taps, reamers, drills, etc. It holds either round, square or oval. This also was made for use in our own shop

PRICE.

3 inches long, - - - - - 50 cents

Ready May 1, 1898.

To Soften Cast Iron for Drilling.

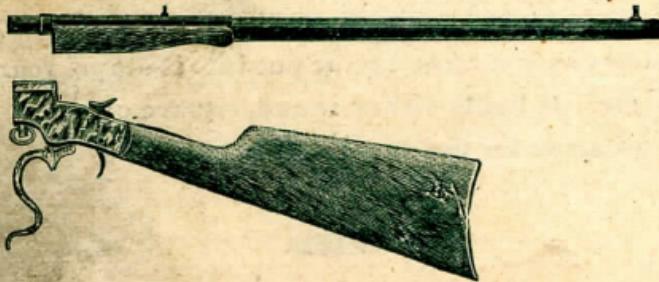
Heat to a cherry-red, having it lie level in the fire. Then with tongs, put on a piece of brimstone, a little less in size than the hole is to be. This softens the iron entirely through. Let it lie in the fire until slightly cooled, when it is ready to drill.

FOR OVER 30 YEARS

STEVENS

Rifles and Pistols have been celebrated for their accuracy.

This is worth considering when looking about for the best weapon.



"Stevens Favorite" Rifle is made from thoroughly first-class material, and is bored to give extreme accuracy. It is a "Take Down" model, and is chambered for the .22 Long-Rifle, Short and Conical, 25 and 32 Rim-Fire Cartridges. Weight 4½ lbs. Barrel 22 inches in length.

PRICE.

No. 17, Plain Open Sights, - -	\$6.00.
No. 18, Target Sights, - - -	\$8.50.

A book on rifles and shooting, with full description of fine rifles, mailed free on application.

J. Stevens Arms & Tool Co.

